

212/262

Claim Listing

1. (currently amended) A device for treating an incompetent anatomical valve or sphincter within the body of a patient, wherein said valve or sphincter controls flow of fluid through a vessel of the body and is supported by tissue of the vessel near the valve or sphincter, said device comprising:

a catheter body having a distal end and a proximal end, said distal end being adapted for insertion into the body;

a first balloon located at the distal end of the catheter, said first balloon being inflatable to a diameter greater than the catheter body distal end, and a first inflation lumen communicating from the proximal end of the catheter body to the distal end of the catheter body;

a heating element mounted on the distal end of the catheter, proximal to the first balloon, said heating element capable of delivering sufficient energy to tissue of the vessel near the valve or sphincter to shrink the tissue near the valve or sphincter;

a suction lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, and a suction port located on the distal end of the catheter communicating from suction lumen to the exterior of the catheter body, said suction port being located proximal the heating element; whereby suction applied to the vessel through the suction port will draw the tissue of the vessel near the valve or sphincter toward the heating element; and

a vacuum source operably connected to the suction lumen.

2. (previously presented) The device of claim 1 further comprising:

212/262

a second balloon located at the distal end of the catheter, proximal to the first balloon, the heating element and suction port, said second balloon being inflatable to a diameter greater than the catheter body distal end.

3. (previously presented) The device of claim 2 further comprising:

a second inflation lumen communicating from the proximal end of the catheter body to the second balloon on the distal end of the catheter body.

4. (previously presented) The device of claim 1 further comprising:

a pair of wires running from the heating element to the proximal end of the catheter, said wires adapted to electrically connect the heating element to direct current power supply; and

wherein the heating element is a resistive heating element.

5. (previously presented) The device of claim 1 further comprising:

a wire running from the heating element to the proximal end of the catheter, said wire adapted to electrically connect the heating element to a radiofrequency power supply; and

wherein the heating element is a radiofrequency electrode adapted for transmission of radiofrequency energy into the tissue of the vessel.

Claims 6 through 8 (canceled)

9. (currently amended) A device for treating an incompetent anatomical valve or sphincter within the body of a patient, wherein said valve or sphincter controls flow of fluid through a vessel of the body and is supported by tissue of the vessel near the valve or sphincter, said device comprising:

212/262

a catheter body having a distal end and a proximal end, said distal end being adapted for insertion into the body;

a first balloon located at the distal end of the catheter, said first balloon being inflatable to a diameter greater than the catheter body distal end, and a first inflation lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, wherein the first inflation lumen is in fluid communication with the first balloon;

a first heating element mounted on the distal end of the catheter, proximal to the first balloon, said first heating element capable of delivering sufficient energy to tissue of the vessel near the valve or sphincter to shrink the tissue near the valve or sphincter;

a second balloon located at the distal end of the catheter, said second balloon being inflatable to a diameter greater than the catheter body distal end, said second balloon proximal to the first balloon and proximal to the first heating element, and a second inflation lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, wherein the second inflation lumen is in fluid communication with the second balloon;

a second heating element mounted on the distal end of the catheter, distal to the second balloon and proximal to the first heating element, said second heating element capable of delivering sufficient energy to tissue of the vessel near the valve or sphincter to shrink the tissue near the valve or sphincter;

a suction lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, and at least one suction port located on the distal end of the

212/262

catheter communicating from the suction lumen to the exterior of the catheter body, said at least one suction port being located proximal to the first heating element and distal to the second heating element; whereby suction applied to the vessel through the at least one suction port will draw the tissue of the vessel near the valve or sphincter toward the first and second heating elements; and a vacuum source operably connected to the suction lumen.

10. (currently amended) A device for treating a plurality of incompetent anatomical valves or sphincters within the body of a patient, wherein said plurality of valves or sphincters control flow of fluid through a vessel of the body and are supported by tissue of the vessel near the plurality of valves or sphincters, said device comprising:

a catheter body having a distal end and a proximal end, said distal end being adapted for insertion into the body;

a first balloon located at the distal end of the catheter, said first balloon being inflatable to a diameter greater than the catheter body distal end, and a first inflation lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, wherein the first inflation lumen is in fluid communication with the first balloon;

a second balloon located at the distal end of the catheter, said second balloon being inflatable to a diameter greater than the catheter body distal end, said second balloon proximal to the first balloon, and a second inflation lumen communicating from the proximal end of the catheter body to the distal end of the catheter body, wherein the second inflation lumen is in fluid communication with the second balloon;

212/262

a plurality of heating elements mounted on the distal end of the catheter body, wherein each of the plurality of heating elements are disposed in series along the length of the catheter body, wherein two succeeding heating elements comprise a pair of heating elements, and wherein the pair of heating elements are further disposed on the catheter body such that a section of catheter body separates each pair of heating elements, wherein each of the plurality of heating elements is capable of delivering sufficient energy to tissue of the vessel near the valve or sphincter to shrink the tissue near the valve or sphincter; and

a suction lumen communicating from the proximal end of the catheter body to the distal end of the catheter body; and

a plurality of suction ports located on the distal end of the catheter communicating from the suction lumen to the exterior of the catheter body, wherein at least one of the plurality of suction ports is disposed between each pair of heating elements, whereby suction applied to the vessel through the plurality of suction ports will draw the tissue of the vessel near each of the plurality of valves or sphincters toward each pair of heating elements; and

a vacuum source operably connected to the suction lumen.

11. (new) The device of claim 1 wherein the heating element is a resistive heating element.

12. (new) The device of claim 9 wherein the first and second heating elements are resistive heating elements.

13. (new) The device of claim 10 wherein each of the plurality of heating elements is a resistive heating element.

212/262

14. (new) The device of claim 1 wherein the vacuum source is capable of producing a vacuum sufficient to draw the tissue near the valve or sphincter in contact with the heating element.

15. (new) The device of claim 9 wherein the vacuum source is capable of producing a vacuum sufficient to draw the tissue near the valve or sphincter in contact with the first heating element and the second heating element.

16. (new) The device of claim 10 wherein the vacuum source is capable of producing a vacuum sufficient to draw the tissue near the plurality of valves or sphincters in contact with the plurality of heating elements.

17. (new) The device of claim 1 further comprising a power source operably connected to the heating element, and said power source being operable to produce energy sufficient to shrink the tissue near the valve or sphincter and deliver said energy to the tissue through the heating element.

18. (new) The device of claim 9 further comprising a power source operably connected to the heating elements, and said power source being operable to produce energy sufficient to shrink the tissue near the valve or sphincter and deliver said energy to the tissue through the heating elements.

19. (new) The device of claim 10 further comprising a power source operably connected to the heating elements, and said power source being operable to produce energy sufficient to shrink the tissue near the valve or sphincter and deliver said energy to the tissue through the heating elements.

20. (new) The device of claim 11 further comprising a DC power source operably connected to the heating element, said DC power source being operable to deliver direct current to the heating element to cause heating of the heating element sufficient to shrink the tissue near the valve or sphincter shrink the tissue

212/262

near the valve or sphincter when said tissue is drawn into proximity to the heating elements.

21. (new) The device of claim 12 further comprising a DC power source operably connected to the heating elements, said DC power source being operable to deliver direct current to the heating element to cause heating of the heating element sufficient to shrink the tissue near the valve or sphincter when said tissue is drawn into proximity to the heating elements.

22. (new) The device of claim 13 further comprising a DC power source operably connected to the heating elements, said DC power source being operable to deliver direct current to the heating element to cause heating of the heating element sufficient to shrink the tissue near the valve or sphincter when said tissue is drawn into proximity to the heating elements.